Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) A method for automated picking of animal cell colonies using an apparatus, comprising:

a) providing a picking head comprising at least one hollow pin having an inside diameter suitable for picking animal cell colonies of a size that is smaller than said inside diameter, the picking head being movable about the apparatus using positioning motors;

b) placing onto the apparatus a sample container having a base on which a plurality animal cell colonies held in a medium are grown, wherein said animal cell colonies have a size smaller than said inside diameter, and also a dispensing container;

c) using machine vision and image processing to identify animal cell colony locations in the sample container;

d) aligning the picking head with the sample container;

e) picking an animal cell colony by aligning one of the hollow pins with one of the animal cell colony locations, moving said one of the hollow pins to a colony picking position in which a distal end of the hollow pin is immersed in the medium over the animal cell colony, and aspirating the animal cell colony into the hollow pin while the distal end of the hollow pin is held in said colony picking position; and

f) dispensing the picked animal cell colony by moving the picking head to above the dispensing container and expelling the picked animal cell colony into the dispensing container.

2. (Previously Presented) The method of claim 1, wherein the picking step comprises repeating the aligning and aspirating steps for the at least one hollow pin to pick multiple ones of the animal cell colonies.

3. (Previously Presented) The method of claim 1, wherein the dispensing container comprises an array of wells separated by a characteristic spacing and the at least one hollow pin comprises a plurality of hollow pins that are also arranged with the characteristic spacing so that the expelling step can be performed in parallel for all the hollow pins.

4. (Previously Presented) The method of claim 1, wherein the animal cell colonies are adhered to the sample container and immersed in the medium, and wherein after the introducing step the distal end of the pin is agitated relative to the sample container so as to produce turbulence in the medium to detach the animal cell colony at that location prior to performing the aspirating step.

5. (Original) The method of claim 1, wherein the animal cell colonies are stained with a contrast enhancing agent to assist the image processing.

6. (Original) The method of claim 1, wherein the animal cell colonies are stained with a fluorescent agent to assist the image processing.

7. (Original) The method according to claim 1, wherein the plurality of animal cell colonies comprise or express a biological molecule of interest.

8. (Original) The method of claim 7, wherein the biological molecule of interest is selected from the group consisting of: a peptide, a polypeptide, a nucleic acid, or a glycosylated or unglycosylated protein.

9. (Original) The method according to claim 8 wherein the protein of interest is a biopharmaceutical protein.

10. (Currently Amended) An apparatus for picking animal cell colonies comprising:

an apparatus bed useful for arranging a sample container comprising a base on which a plurality of animal cell colonies held in a medium are grown;

a camera useful for capturing images of the animal cell colonies;

a computer for controlling the apparatus;

control software and image processing software resident in the computer, wherein the image processing software is useful for identifying animal cell colony locations from captured images, and the control software is useful for controlling the picking of animal cell colonies through interaction with the image processing software, and control of various components of the apparatus; and

a picking head movable relative to the apparatus bed under control of the control software and using positioning motors to animal cell colony locations identified by the image processing software from said images, wherein the picking head comprises at least one hollow pin, the at least one hollow pin comprising an inner pin and an outer pin, wherein the inner pin is recessed axially inside an end of the outer pin, wherein the inner pin has an inside diameter, and wherein the animal cell colonies being picked have a size that is smaller than inside diameter of the inner pin, the at least one hollow pin being connected to a drive that introduces a distal end of the at least one hollow pin into the sample container, and further connected through respective at least one fluid conduct to a pressure controller that is operable to aspirate quantities of the medium from the sample container into the inner pin of the at least one hollow pin, to retain the medium and to expel it when required, thereby allowing animal cell colonies to be picked from the medium by the at least one hollow pin, and wherein the control software of the computer is operable to control the apparatus for colony picking by:

(i) capturing an image of the animal cell colony with the camera;

(ii) performing image analysis with the image processing software to detect those animal cell colonies to pick, thereby creating a pick list of target colonies;

(iii) assigning the apparatus to collect the target colonies from the pick list with the control software, wherein the target colonies are picked by repeatedly performing the following actions specified by the control software:

(a) aligning one of the at least one hollow pin to an animal cell colony location in the pick list;

(b) moving said hollow pin to a colony picking position in which a distal end of the hollow pin is immersed in the medium over the animal cell colony, and

(c) aspirating the animal cell colony at that location into the inner pin while the distal end of the hollow pin is held in said colony picking position.

11. (Previously Presented) The apparatus of claim 10, wherein the apparatus further comprises a drive mechanism useful for causing lateral oscillation of distal ends of the at least one hollow pin to facilitate detachment of animal cell colonies adhered to the sample container.

12. (Previously Presented) The apparatus of claim 11, wherein the drive mechanism is configured to cause rotary motion of the distal ends of the at least one hollow pin.

13. (Previously Presented) The apparatus of claim 10, wherein the at least one hollow pin comprises a plurality of hollow pins that are arranged in a characteristic spacing matched to a well plate standard spacing.

14. (Previously Presented) A method that comprises using the apparatus according to claim 10 for identifying an animal cell colony comprising or expressing a biological molecule of interest.

15. (Previously Presented) The method according to claim 14, wherein the biological molecule of interest is selected from the group consisting of: a peptide, a polypeptide, a nucleic acid, or a glycosylated or unglycosylated protein.

16. (Previously Presented) The method according to claim 14, wherein the glycosylated or unglycosylated protein of interest is a biological molecule.

17. (Previously Presented) The method of claim 1, wherein the animal cell colonies are held suspended in the medium.

18. (Previously Presented) The method of claim 1, wherein the animal cell colony comprises a plurality of cells.

19. (Previously Presented) The method of claim 1, wherein the animal cell colony consists of a single cell.

20. (Previously Presented) A method that comprises using the apparatus according to claim 10 for picking animal cell colonies held suspended in a medium, wherein the method comprises the steps of picking an animal cell colony by aligning the at least one hollow pin with one of the animal cell colony locations, moving the at least one hollow pin to a colony picking position in which a distal end of the at least one hollow pin is immersed in the medium over the animal cell colony, and aspirating the animal cell colony into the at least one hollow pin while the distal end of the at least one hollow pin is held in said colony picking position.

21. (Previously Presented) A method that comprises using the apparatus according to claim 10 for identifying and picking an animal cell colony comprising a plurality of cells, wherein the method comprises the steps of picking an animal cell colony by aligning the at least one hollow pin with one of the animal cell colony locations, moving the at least one hollow pin to a colony picking position in which a distal end of the at least one hollow pin is immersed in the medium over the animal cell colony, and aspirating the

animal cell colony into the at least one hollow pin while the distal end of the at least one hollow pin is held in said colony picking position.

22. (Previously Presented) A method that comprises using the apparatus according to claim 10 for identifying and picking an animal cell colony consisting of a single cell, wherein the method comprises the steps of picking an animal cell colony by aligning the at least one hollow pin with one of the animal cell colony locations, moving the at least one hollow pin to a colony picking position in which a distal end of the at least one hollow pin is immersed in the medium over the animal cell colony, and aspirating the animal cell colony into the at least one hollow pin while the distal end of the at least one hollow pin is held in said colony picking position.

23.-32. (Canceled)

33. (Previously Presented) The apparatus of claim 10, wherein the at least one hollow pin comprises a plurality of hollow pins.

34. (Previously Presented) The apparatus of claim 11, wherein the drive mechanism is arranged in the picking head.

35. (Previously Presented) The apparatus of claim 11, wherein the drive mechanism is not provided by the positioning motors.

36. (Previously Presented) The method of claim 1, wherein the distal end of the hollow pin is offset from the base of the sample container by an offset distance, and the offset distance between the distal end of the hollow pin and the base of the sample container is in a range between about 0.1 mm and about 0.4 mm.

37. (Previously Presented) The method of claim 36, wherein the offset distance between the distal end of the hollow pin and the base of the sample container is from about 0.25 mm to about 1.0 mm.

38. (Previously Presented) The apparatus of claim 10, wherein the distal end of the hollow pin is offset from the base of the sample container by an offset distance while in said colony picking position, and the offset distance between the distal end of the hollow pin and the base of the sample container is in a range between about 0.1 mm and about 4.0 mm.

39. (Previously Presented) The apparatus of claim 38, wherein the offset distance between the distal end of the hollow pin and the base of the sample container is from about 0.25 mm to about 1.0 mm.

40 – 42. (Canceled)